



Mawlana Bhashani Science And Technology University

Lab-Report

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Submitted By:

Name: Md. Mehedi Hasan Tipu

ID: IT-18046

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Dept. of ICT

MBSTU

Submitted To:

Nazrul Islam

Assistant Professor

Dept. of ICT

MBSTU

File operation and permission

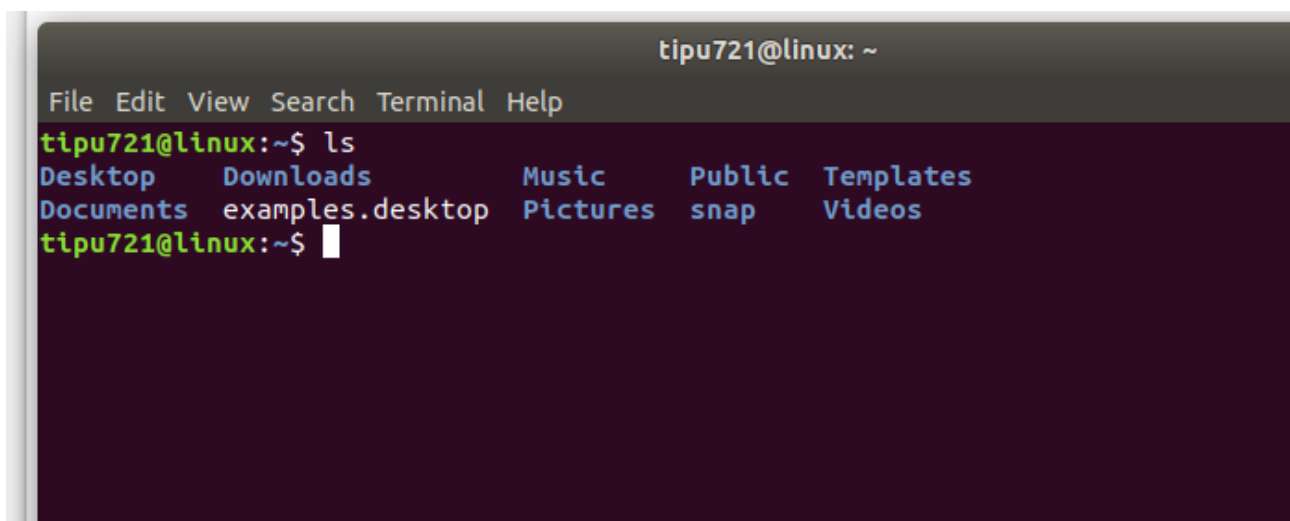
Objectives:

- i. File operation
- ii. File permission

File Operation: To use the Linux terminal like a pro, we'll need to know the basics of managing files and navigating directories. Different file operation is given below...

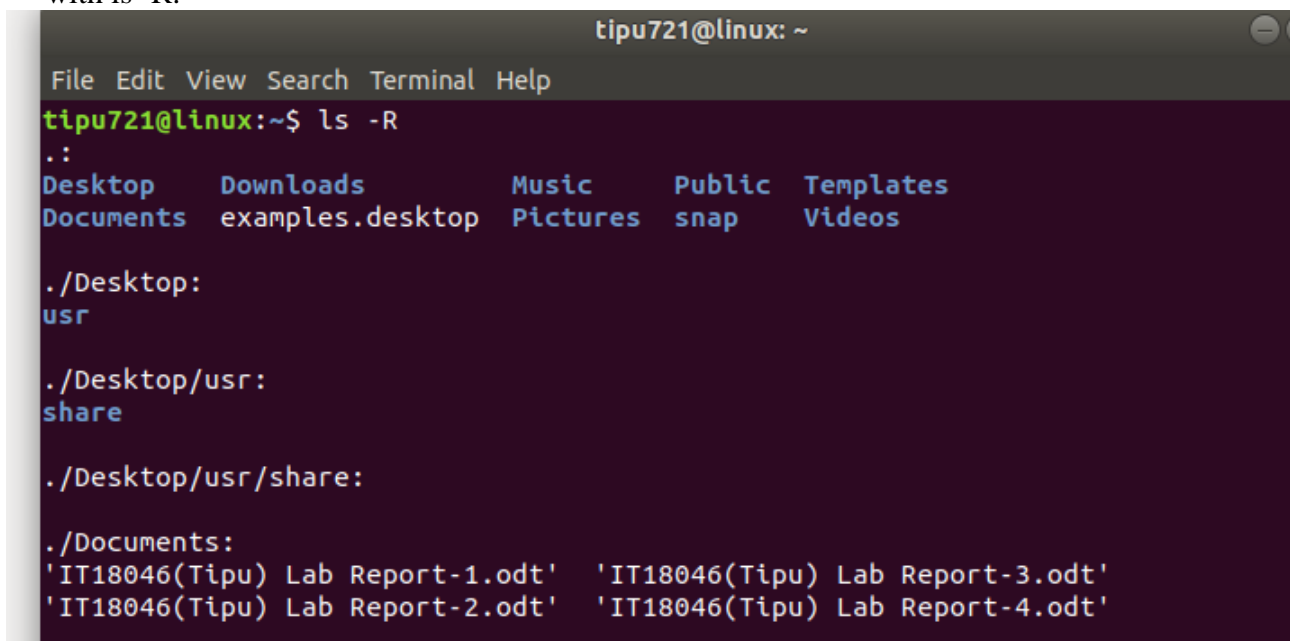
1. ls – List Files

The ls command lists the files in a directory. By default, ls lists files in the current directory.

A terminal window titled 'tipu721@linux: ~' with a menu bar (File, Edit, View, Search, Terminal, Help). The command 'tipu721@linux:~\$ ls' has been executed, resulting in a color-coded listing of files and directories: Desktop, Downloads, Music, Public, Templates, Documents, examples.desktop, Pictures, snap, and Videos. The prompt 'tipu721@linux:~\$' is followed by a cursor.

```
tipu721@linux: ~
File Edit View Search Terminal Help
tipu721@linux:~$ ls
Desktop  Downloads  Music     Public    Templates
Documents examples.desktop Pictures  snap      Videos
tipu721@linux:~$
```

2. we can also list files recursively — that is, list all files in directories inside the current directory — with ls -R.

A terminal window titled 'tipu721@linux: ~' with a menu bar (File, Edit, View, Search, Terminal, Help). The command 'tipu721@linux:~\$ ls -R' has been executed, showing a recursive listing. It starts with '..:' and lists the top-level directories. Then it shows the contents of './Desktop:', which is 'usr'. Then it shows the contents of './Desktop/usr:', which is 'share'. Then it shows the contents of './Desktop/usr/share:', which is empty. Finally, it shows the contents of './Documents:', which lists four files: 'IT18046(Tipu) Lab Report-1.odt', 'IT18046(Tipu) Lab Report-2.odt', 'IT18046(Tipu) Lab Report-3.odt', and 'IT18046(Tipu) Lab Report-4.odt'. The prompt 'tipu721@linux:~\$' is followed by a cursor.

```
tipu721@linux: ~
File Edit View Search Terminal Help
tipu721@linux:~$ ls -R
..:
Desktop  Downloads  Music     Public    Templates
Documents examples.desktop Pictures  snap      Videos

./Desktop:
usr

./Desktop/usr:
share

./Desktop/usr/share:

./Documents:
'IT18046(Tipu) Lab Report-1.odt' 'IT18046(Tipu) Lab Report-3.odt'
'IT18046(Tipu) Lab Report-2.odt' 'IT18046(Tipu) Lab Report-4.odt'
tipu721@linux:~$
```

3. cd – Change Directory

The cd command changes to another directory. For example, cd Desktop will take you to your Desktop directory if you're starting from your home directory.

```
tipu721@linux: ~/Desktop
File Edit View Search Terminal Help
tipu721@linux:~$ ls
Desktop    Downloads    Music        Public    Templates
Documents  examples.desktop  Pictures    snap      Videos
tipu721@linux:~$ cd Desktop
tipu721@linux:~/Desktop$
```

4. cd .. will take you up a directory.

```
tipu721@linux: ~
File Edit View Search Terminal Help
tipu721@linux:~$ ls
Desktop    Downloads    Music        Public    Templates
Documents  examples.desktop  Pictures    snap      Videos
tipu721@linux:~$ cd Music
tipu721@linux:~/Music$ cd ..
tipu721@linux:~$
```

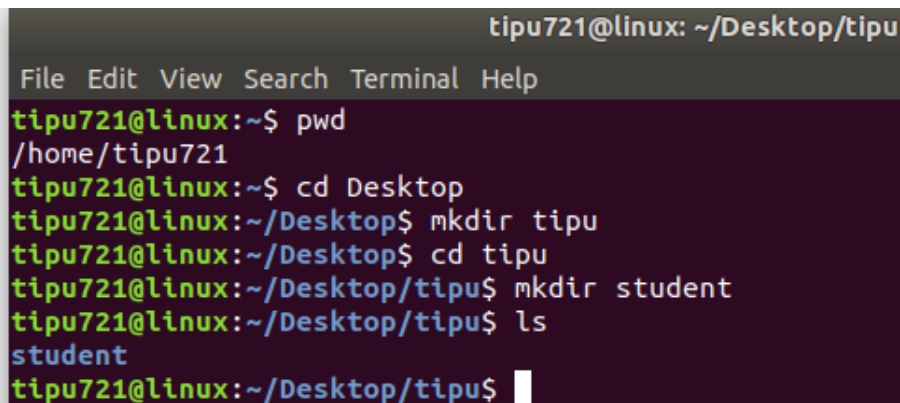
5.rmdir – Remove Directories

The rmdir command removes an empty directory. rmdir directory would delete the directory named “directory” in the current directory.

```
Try: sudo apt install <deb name>
tipu721@linux:~/Desktop$ rmdir
rmdir: missing operand
Try 'rmdir --help' for more information.
tipu721@linux:~/Desktop$ rmdir usr
rmdir: failed to remove 'usr': Directory not empty
tipu721@linux:~/Desktop$
```

6) mkdir – Make Directories

The mkdir command makes a new directory. mkdir example will make a directory with the name “example” in the current directory.

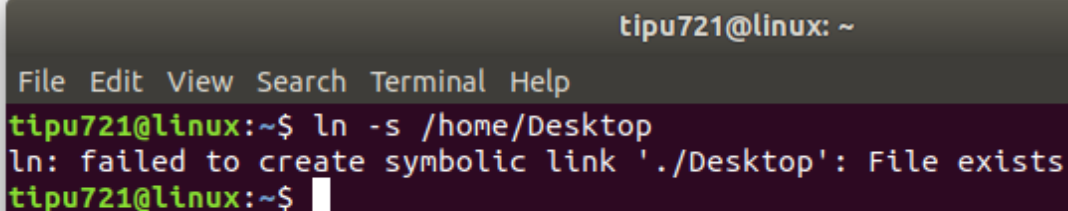
A terminal window titled 'tipu721@linux: ~/Desktop/tipu' with a menu bar (File, Edit, View, Search, Terminal, Help). The user runs 'pwd' and gets '/home/tipu721'. Then they run 'cd Desktop' and 'mkdir tipu'. They then run 'cd tipu' and 'mkdir student'. Finally, they run 'ls' and see 'student' listed.

```
tipu721@linux: ~/Desktop/tipu
File Edit View Search Terminal Help
tipu721@linux:~$ pwd
/home/tipu721
tipu721@linux:~$ cd Desktop
tipu721@linux:~/Desktop$ mkdir tipu
tipu721@linux:~/Desktop$ cd tipu
tipu721@linux:~/Desktop/tipu$ mkdir student
tipu721@linux:~/Desktop/tipu$ ls
student
tipu721@linux:~/Desktop/tipu$
```

7) ln – Create Links

The ln command creates links. The most commonly used type of link is probably the symbolic link, which you can create with ln -s.

For example, the following command creates a link to our Downloads folder on our Desktop:

A terminal window titled 'tipu721@linux: ~' with a menu bar (File, Edit, View, Search, Terminal, Help). The user runs 'ln -s /home/Desktop' and receives an error message: 'ln: failed to create symbolic link './Desktop': File exists'.

```
tipu721@linux: ~
File Edit View Search Terminal Help
tipu721@linux:~$ ln -s /home/Desktop
ln: failed to create symbolic link './Desktop': File exists
tipu721@linux:~$
```

File Permissions:

There are 3 types of permissions:

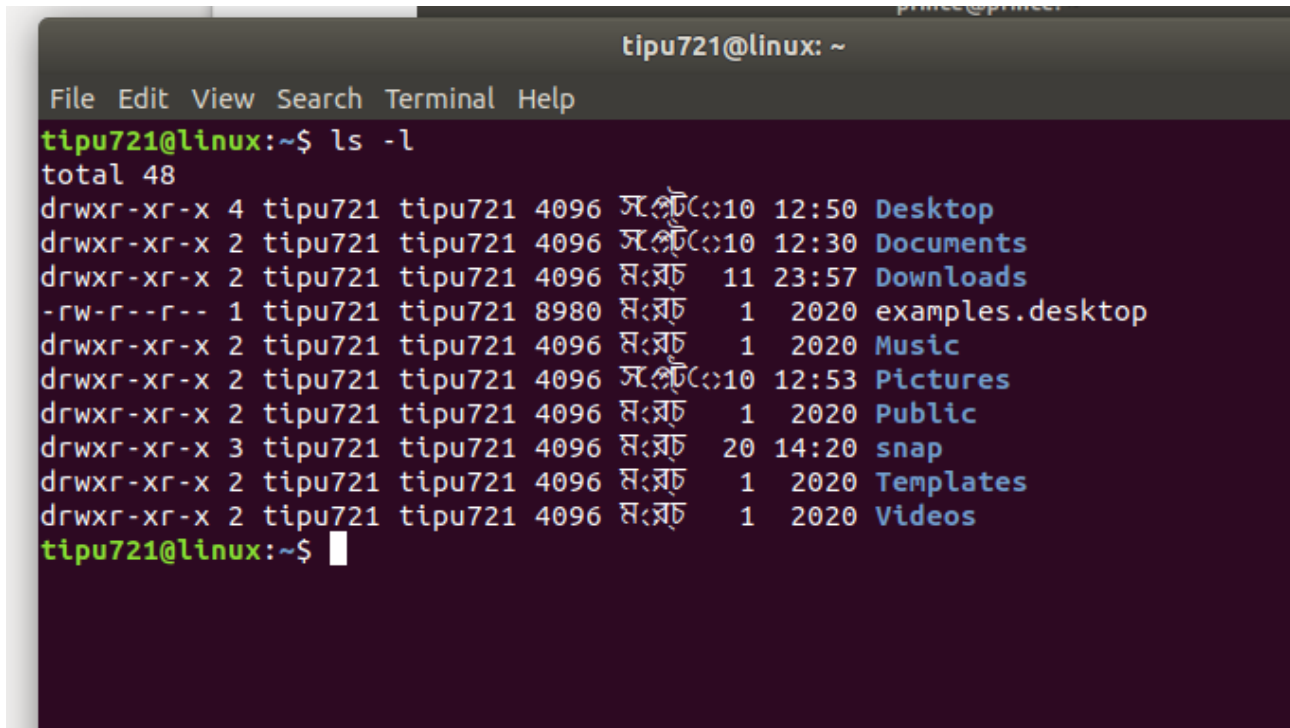
- 1) Read
- 2) Write
- 3) Execute permission

Read (r): this gives permission to merely open a file or folder and view its contents.

Write (w): this gives permission to overwrite, append-to or delete a file or folder.

Execute (x): this gives permission to "run" a file. For example to run a script or a program.

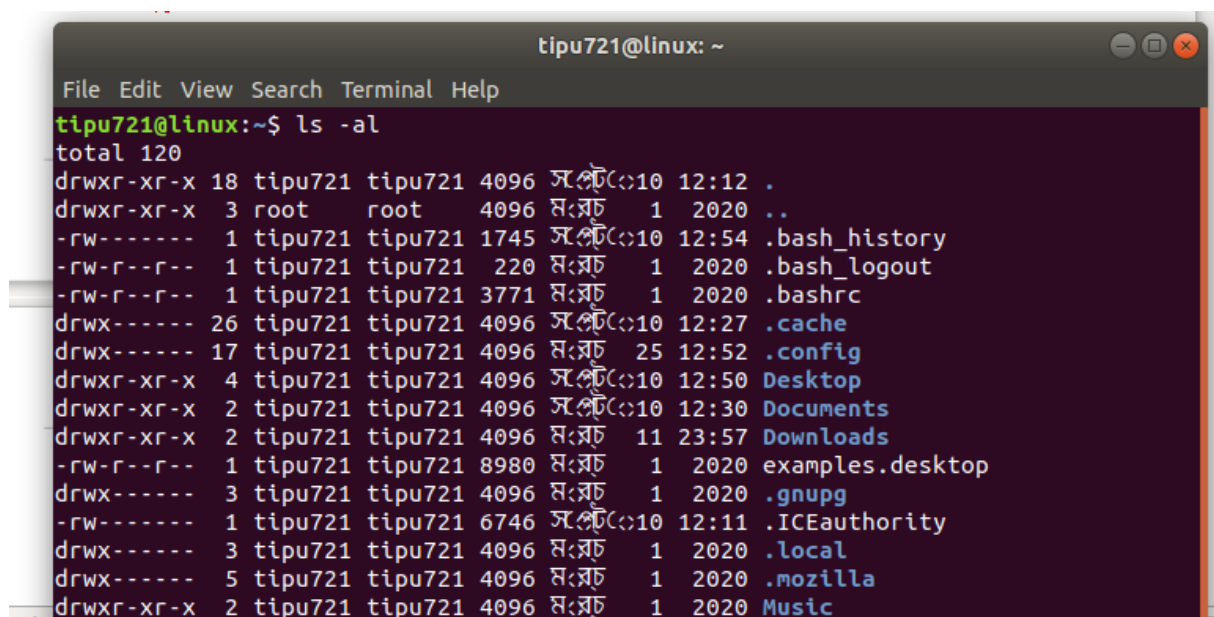
So, how can we put this all into context? Let's have a look at the contents of a typical folder. I used the command `ls -l` to bring up this list:



```
tipu721@linux: ~  
File Edit View Search Terminal Help  
tipu721@linux:~$ ls -l  
total 48  
drwxr-xr-x 4 tipu721 tipu721 4096 2020-10-10 12:50 Desktop  
drwxr-xr-x 2 tipu721 tipu721 4096 2020-10-10 12:30 Documents  
drwxr-xr-x 2 tipu721 tipu721 4096 2020-11-23 23:57 Downloads  
-rw-r--r-- 1 tipu721 tipu721 8980 2020-08-01 2020 examples.desktop  
drwxr-xr-x 2 tipu721 tipu721 4096 2020-08-01 2020 Music  
drwxr-xr-x 2 tipu721 tipu721 4096 2020-10-10 12:53 Pictures  
drwxr-xr-x 2 tipu721 tipu721 4096 2020-08-01 2020 Public  
drwxr-xr-x 3 tipu721 tipu721 4096 2020-08-20 14:20 snap  
drwxr-xr-x 2 tipu721 tipu721 4096 2020-08-01 2020 Templates  
drwxr-xr-x 2 tipu721 tipu721 4096 2020-08-01 2020 Videos  
tipu721@linux:~$
```

we can also do this via the command-line. Go to a directory that has files in it and type the following command to view all files in a list:

`ls -al`



```
tipu721@linux: ~  
File Edit View Search Terminal Help  
tipu721@linux:~$ ls -al  
total 120  
drwxr-xr-x 18 tipu721 tipu721 4096 2020-10-10 12:12 .  
drwxr-xr-x 3 root root 4096 2020-08-01 2020 ..  
-rw-r--r-- 1 tipu721 tipu721 1745 2020-10-10 12:54 .bash_history  
-rw-r--r-- 1 tipu721 tipu721 220 2020-08-01 2020 .bash_logout  
-rw-r--r-- 1 tipu721 tipu721 3771 2020-08-01 2020 .bashrc  
drwxr-xr-x 26 tipu721 tipu721 4096 2020-10-10 12:27 .cache  
drwxr-xr-x 17 tipu721 tipu721 4096 2020-11-25 12:52 .config  
drwxr-xr-x 4 tipu721 tipu721 4096 2020-10-10 12:50 Desktop  
drwxr-xr-x 2 tipu721 tipu721 4096 2020-10-10 12:30 Documents  
drwxr-xr-x 2 tipu721 tipu721 4096 2020-11-23 23:57 Downloads  
-rw-r--r-- 1 tipu721 tipu721 8980 2020-08-01 2020 examples.desktop  
drwxr-xr-x 3 tipu721 tipu721 4096 2020-08-01 2020 .gnupg  
-rw-r--r-- 1 tipu721 tipu721 6746 2020-10-10 12:11 .ICEauthority  
drwxr-xr-x 3 tipu721 tipu721 4096 2020-08-01 2020 .local  
drwxr-xr-x 5 tipu721 tipu721 4096 2020-08-01 2020 .mozilla  
drwxr-xr-x 2 tipu721 tipu721 4096 2020-08-01 2020 Music
```

Next to each file and directory, we'll see a special section that outlines the permissions it has. It looks like this:

`-rwxrw-r-`

The r stands for "read," the w stands for "write," and the x stands for "execute." Directories will be start with a "d" instead of a "-". You'll also notice that there are 10 spaces which hold value. You can ignore the first, and then there are 3 sets of 3. The first set is for the owner, the second set is for the group, and the last set is for the world.

To change a file or directory's permissions, let's look at the basic form of the chmod command.

`chmod [class][operator][permission] file`

`chmod [ugoa][+ or -] [rwx] file`

u: This is for the owner.

g: This is for the group.

o: This is for all others.

a: This will change permissions for all of the above.

+: The plus sign will add the permissions which follow.

-: The minus sign will remove the permissions which follow.

r: Allows read access.

w: Allows write access.

x: Allows execution.

Discussion:

In Linux, we use permissions to control what a user can do with a file or directory. ... For directories, the read permission allows the user to view the names of files and other directories stored in it. Write: For a file, the write permission allows a user to modify and delete a file.